

Montana Bureau of Mines and Geology NGWMN Final Technical Report

Award Number: G17AC00176

Agency Name: Montana Bureau of Mines and Geology

Title: Montana Bureau of Mines and Geology State-Cooperative Agreement to Support National Groundwater Monitoring Network FY2017

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Term Covered: July 1, 2017 to August 31, 2019

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Background

The Montana Bureau of Mines and Geology (MBMG) maintains a statewide groundwater monitoring network to collect water-level and water-quality data from about 850 wells. Many of these wells are completed in Principal Aquifers that include the heavily developed intermontane basin aquifers in the west (S100NRMTIB), and the less intensively developed but widely used alluvial (N100ALLUVL), Lower Tertiary (N300LTRTRY), Upper Cretaceous (N300UPCTCS), Lower Cretaceous (N300LCRTCS), and Paleozoic aquifers (N500PLOZOC) in the east. MBMG became a NGWMN data provider in 2015 and at the start of this project provided water-level data for 227 sites, and water-quality data for 58 sites.

- **Description of work done to support the NGWMN as a data provider**

The work performed for award G17AC00176 was under Objective 4: Well Maintenance as described in Program Announcement/Funding Opportunity G15ACOO254. Funding was requested to perform maintenance on three wells, 1) a flowing artesian well with a damaged well head (MBMG-132595), 2) remove a pump/drop pipe from an unused well, then cleanout and develop the well (MBMG-74121), 3) clean out debris and develop an unused irrigation well (MBMG-77168). The three wells are located in northwest Montana and completed in the Northern Intermontane Basin Aquifer system (S100NRMTIB).

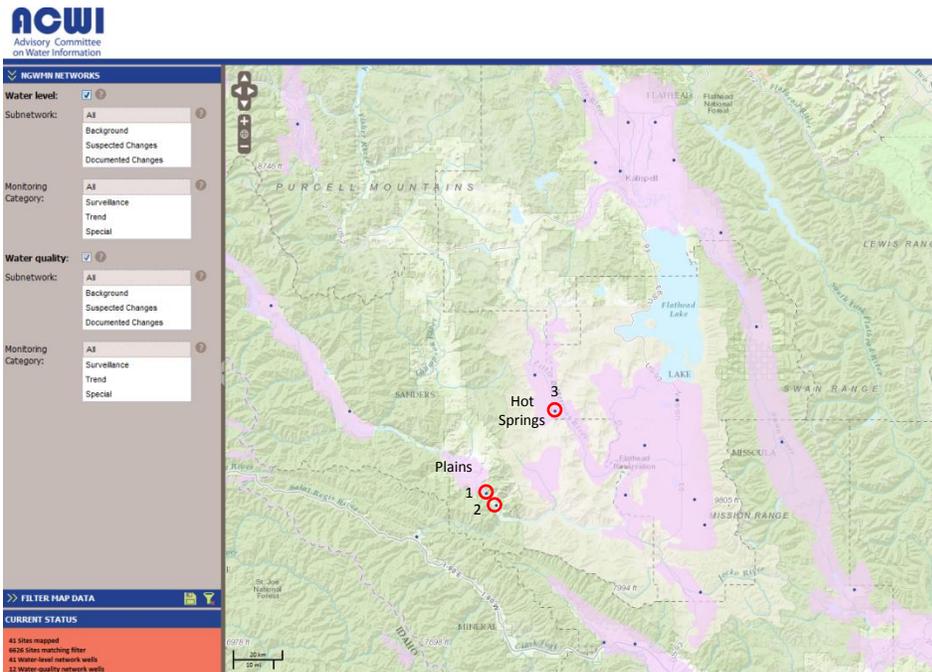


Figure 1. Well maintenance locations, 1:MBMG-132595, 2:MBMG-74121, and 3:MBMG-77168.

Work was only able to be performed on well MBMG-77168 (site 3, fig. 1), a 306 foot deep unused irrigation well. Debris had been observed floating in the well, a licensed water-well

contractor (Lewis Drilling of Thompson Falls Montana) was contracted with to sound the well, to verify well depth, and redevelop and clean out the well to ensure adequate connection to the aquifer.

On August 4, 2017, Lewis Drilling mobilized to the site to redevelop the well. Initially water was purged with a 3-inch submersible pump, however pumping was immediately halted because the well intake became clogged (fig. 2). A bailer was then use to purge debris from the well (fig. 3). The well was bailed for approximately two hours until the water was clear. The initial static water level was 34.45 feet, the water level after bailing was 34.55 feet. Sounding confirmed a total depth of 306 feet.



Figure 2. Clogged well screen.



Figure 3. Bailer

Ownership of site MBMG-74121 (site 2, fig. 1) changed since the original proposal was written and the new landowner will no longer grant access to the site. Therefore the proposed work could not be completed and this well has been dropped from the NGWMN network.

The proposed work on well MBMG-132595 (site 3, fig. 1) was scheduled to be completed during August 2019, however health issues prevented the contractor from completing the work.

Because work was only done on two of the three sites, the project was under budget by \$9,377.

- **Description of any updates made to web services during period of award**

Web services were not as part of this project.

- **Description of any problems encountered in serving data to the NGWMN data portal**

There were no problems serving data to the NGWMN data portal during this project.

- **Notice of any changes in databases or web services that are being planned that would impact future integration of the web services with the NGWMN data portal**

There are no planned changes to the MBMG web services.